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J-21-0105

B. Tech. EXAMINATION, 2021

Semester VI (CBCS)

ANTENNA AND WAVE PROPAGATION

EC-602

Time : 2 *Hours* *Maximum Marks :* 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. State Gauss's theorem and explain why is it called the divergence ? **15**

2. Explain the principles of electromagnetic radiation for antenna. **15**

Section B

3. What are various types of antenna arrays ? Explain parasitic arrays in detail. **15**

4. Describe a typical medium frequency broadcast antenna. Explain, how is it excited ? How would you proceed to measure the field strength of such as antenna in its neighbourhood ? **15**

Section C

5. Explain the principle and working of lens antenna with neat diagram. **15**

6. Describe the methods of measuring the radiation resistance and field strength of an antenna. **15**

Section D

7. Explain the phenomenon of ground wave propagation on an imperfect earth. **15**

8. Derive the expression for refractive index of ionosphere. **15**

(Compulsory Question)

9. (a) What are the different types of aperture ?

(b) What is meant by Polarization ?

(c) What is meant by isotropic radiator ?

(d) What is duality of antenna ?

(e) What is meant by similar point sources ?

(f) What do you understand by retarded current ?

(g) What are the parameters to be considered for the design of a helical antenna ?

(h) Define frequency diversity Reception.

(i) What are the factors that affect the propagation of radio waves ?

(j) What is End Fire Array ? Derive the maxima, null directions and also the beamwidth of an Endfire array. **1½×10=15**